



Robust GIS Data – What to do Next

March 22, 2016



Discussion Summary

- Starting Point
- What is Asset Management?
- Who Benefits?
- Taking it a Step Further
- Questions/Discussion



Data in Development

- Majority of airports have access to data
 - In-house, municipality, county, etc.
- FAA planning, design and construction requirements
 - AGIS compliant deliverables
- Consultants and contractors
- Airport operations and maintenance
- FAA developed

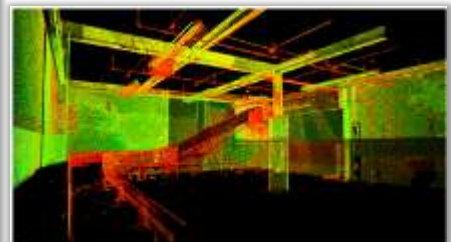


Airport GIS

- Sponsor or FAA AGIS



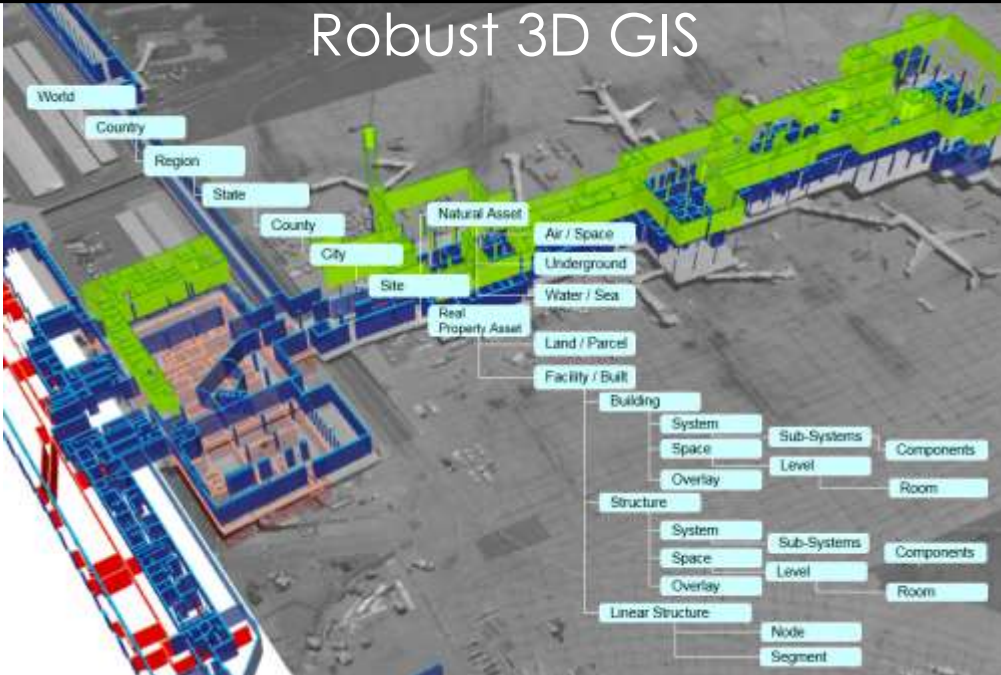
Data Sources Exist



Robust 3D GIS



Robust 3D GIS



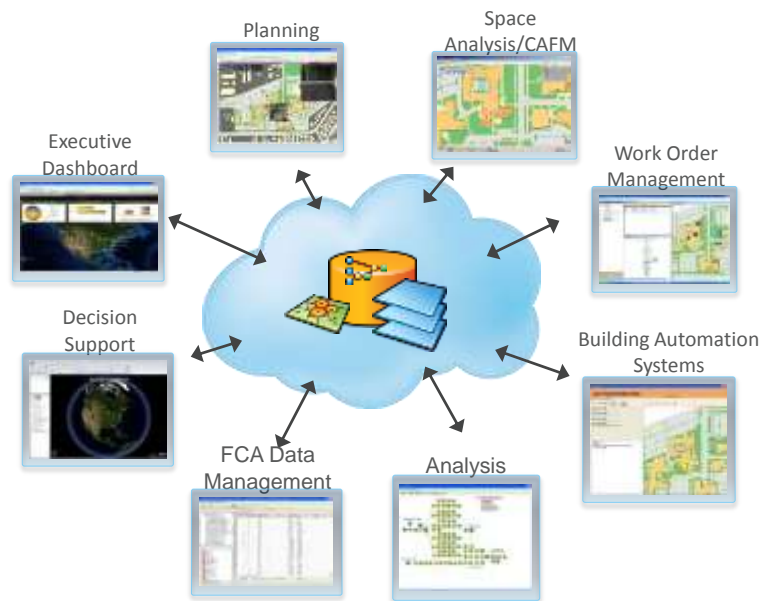
What to be done with all that “data”?

- Facility/Asset Management

- Airside
- Landside
- Terminal
- Vendors
- Tenants



GIS Supports Enterprise Facility Applications



What is Asset Management

- A new way of thinking – LIFECYCLE
- Pervasive throughout the organization
- Integration of multiple information systems
 - GIS
 - CMMS/EAM
 - CAFM
 - Risk-informed CIP Strategies



Define Asset Management

- Asset management is a process for providing the public with a cost-effective level of service by making the right decisions on the acquisition, maintenance, operation, rehabilitation and disposal of assets

Why Asset Management?

- Good quality infrastructure is the cornerstone of sustainability
- Funds are harder to maintain / secure
- Informed and justified investment decisions
- Efficiency of daily operations
- Minimize major repairs or complete overhauls
- Providing a predictive budget
- Create measurable increases in benefits to every department across your airport



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Risk-Based Asset Management Analysis

- Incorporates Inventory, Condition, Criticality
- Uses history and statistics to predict time to failure
- Generates a Business Risk Exposure (BRE) value for each asset



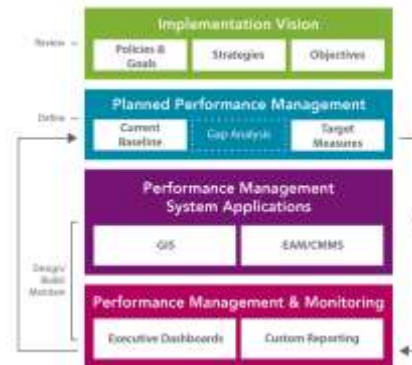
Asset Management Components

- The **Program** considers the linkage between condition, service levels, useful life, and repair costs relative to service delivery costs and revenue
 - Set Goals
 - Defined Strategies
 - Execute Tactics
- The **System** provides information needed to make decisions on the acquisition, maintenance, operation, rehabilitation, and disposal of assets
 - Monitor and Measure
 - Make Adjustments

Asset Management Program

Asset management Program Framework

- Implementing an Asset Management program is HUGE!



Asset Management Program Evolution

- **Asset Tracking**
 - What do I own?
 - Where are my things?
- **Workforce Management and Job Tracking**
 - What issues have been reported?
 - Are we working on them? Who is doing the work?
 - When will they be complete?
- **Maintenance Planning and Resource Scheduling**
 - What should we be working on next week, month, year?
 - How much overtime have I been using?
 - How should I deploy my employees?
- **Advanced Asset Management**
 - What is the lifecycle cost of my equipment and how can I lower it?
 - What should be included in my capital plan for then year, next 10 years?
 - Where are my largest risks?

Asset Tracking

- Foundation of any program
 - What do I have?
 - Where is everything?
- Airports need more...



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Work Management and Job Tracking

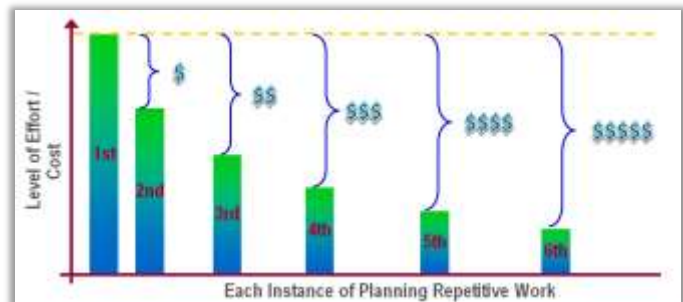
- Computerized Maintenance Management Systems (CMMS)
- Ensure that all work gets done
 - Centralized issue tracking
- Improves communication
 - Interaction automated – shared responsibilities
- Makes better use of **employee's time**



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Maintenance Planning and Resource Scheduling

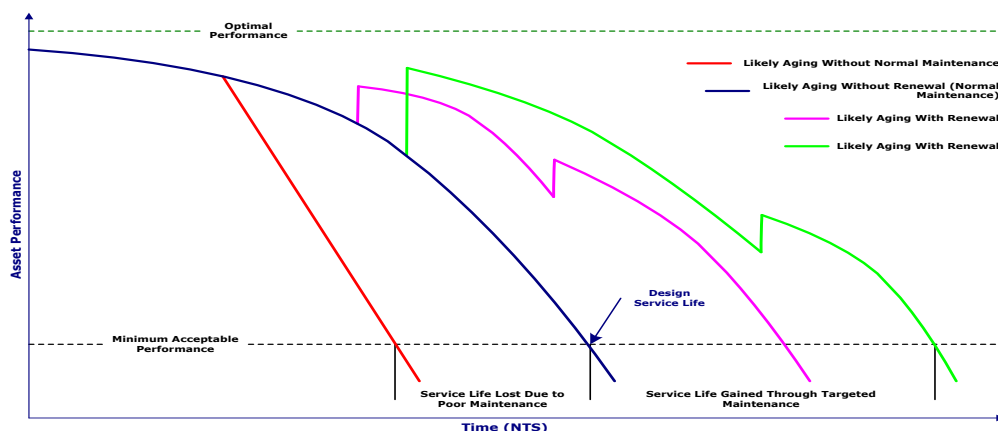
- Day-to-day maintenance ops running smoothly:
 - Plan weeks or months into the future
 - Evaluate the amount of overtime being used
 - Evaluate the number of jobs on hold
 - Redeploy staff to the more important tasks
 - Optimize routes to ensure efficiently



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Advanced Asset Management

- Asset Repair and Rehabilitation Extends Useful Life



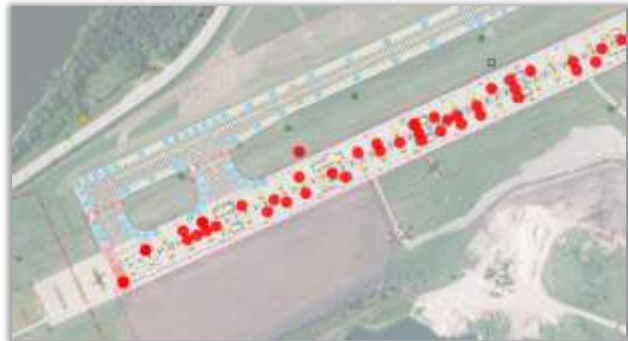
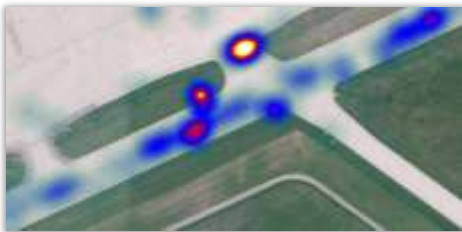
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Asset Management System



Asset Management System Definition

- The **System** provides information needed to make decisions on the acquisition, maintenance, operation, rehabilitation, and disposal of assets



Benefits for Maintenance

- Customizable to suit Airport Needs
 - Adaptable to Airport’s current work flows
 - Track Part 139 & non-Part 139 work orders
 - Keep a record of assets to monitor



Benefits for Maintenance

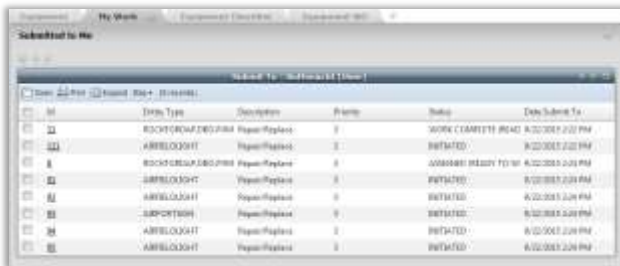
- View Outstanding Work Orders in Real Time

ID	Entity Type	Description	Priority	Assigned To	Start Estimate	Assignment To
111	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
112	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
113	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
114	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
115	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
116	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
117	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
118	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
119	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
120	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
121	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
122	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
123	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
124	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	
125	WORK ORDER	Equipment	1	WO11-ACD	01/01/2011 01:00	



Benefits for Maintenance

- View Work Orders based upon Individual Needs
 - Work Orders Assigned to Me
 - Past Due Work Orders



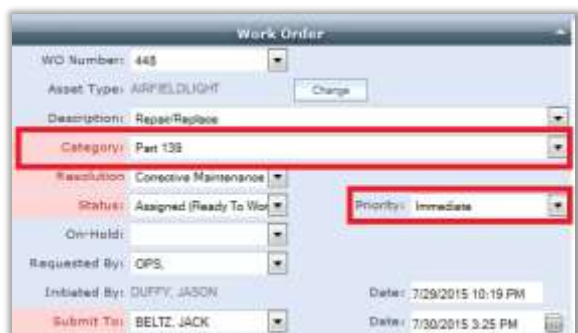
ID	Type	Description	Priority	Status	Date Submitted
1	ROCKY HILL	Repair/Replace	3	WORK COMPLETE	8/22/2015 2:20 PM
2	ARFIELD LIGHT	Repair/Replace	3	INITIATED	8/22/2015 2:20 PM
3	ROCKY HILL	Repair/Replace	3	AWAITING READY TO GO	8/22/2015 2:20 PM
4	ARFIELD LIGHT	Repair/Replace	3	INITIATED	8/22/2015 2:20 PM
5	ARFIELD LIGHT	Repair/Replace	3	INITIATED	8/22/2015 2:20 PM
6	SUPPLEMENT	Repair/Replace	3	INITIATED	8/22/2015 2:20 PM
7	ARFIELD LIGHT	Repair/Replace	3	INITIATED	8/22/2015 2:20 PM
8	ARFIELD LIGHT	Repair/Replace	3	INITIATED	8/22/2015 2:20 PM



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Benefits for Maintenance

- Work Order can be Prioritized based on:
 - Part 139 / Non Part 139
 - Discrepancies
 - Priorities
 - Many more



Work Order

WO Number: 445

Asset Type: ARFIELD LIGHT

Description: Repair/Replace

Category: Part 139

Resolution: Corrective Maintenance

Status: Assigned (Ready To Work)

Priority: Immediate

Requested By: OPS

Initiated By: DUFFY, JASON

Submit To: BELTZ, JACK

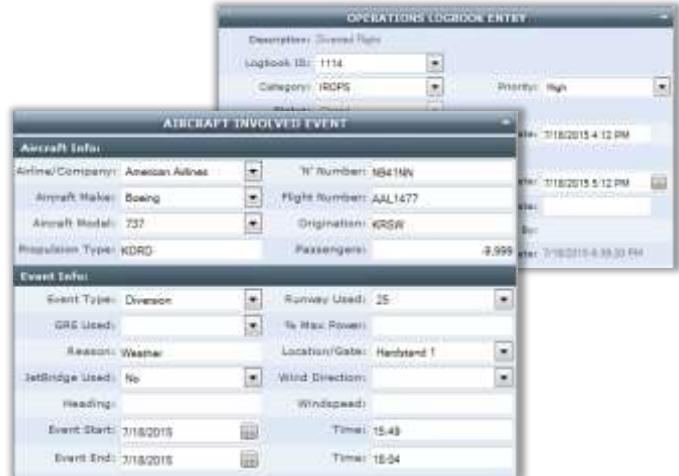
Date: 7/29/2015 10:19 PM

Date: 7/30/2015 3:25 PM

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Benefits for Operations

- Logbook Entries
 - Escorts
 - Diversions
 - Tours
 - Noise Complaints
 - More / Configurable



Benefits for Operations

- Reporting
 - NOTAM
 - Airfield Inspections
 - Diversion
 - Wildlife
 - More / Configurable

RFD - Diversions Report

Dates between 6/1/2015 and 6/30/2015

Logbook #	Initiated By	Initiated DateTime	Event Start	Event End	Airline/Company	Make	Model	Nr. Number	Flight Number	Class	Passengers	GSE Used	Runway Used	Location	Initiation Used
1319	DAVID JASON	6/6/2015	08:00:00		AMERICAN AIRLINES	BOEING	737	3028	1411	COM		25			
1320	JEFFY MAHON	6/6/2015	08:00:00		AMERICAN AIRLINES	BOEING	737	1622	1390	COM		25			
1321	FRANK CHERR	6/6/2015	08:00:00		AMERICAN AIRLINES	BOEING	737	1622	1390	COM		1			
1432	DELE SHAMMO	6/6/2015			UNITED AIRLINES	BOEING	737	16273	041476	YVC					

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RFD - Part 139 Airfield Inspection Report

05/06/2015 Evening Shift

AIRFIELD INSPECTION

Logbook # 28 Inspected By DUFFY, JASON Inspection Date/Time 6/6/2015 4:38:51PM

AIRFIELD DISCREPANCIES

Discrepancies are indicated in red and no discrepancies in black. Work Orders handled during this shift are listed below.

Category	Item	Status	Category	Item	Status	Category	Item	Status
Pavement Areas	A. Pavement Lip Over 3"	Satisfactory	Lighting	A. Obscured/Dirty/Faded	Satisfactory	Obstructions	A. Obstruction Lights	Satisfactory
	B. Hole 5" Diam/3" Deep	Satisfactory		B. Damaged/Missing	Satisfactory		B. Cranes/Trees	Satisfactory
	C. Cracks/Spalling/Bumps	Satisfactory		C. Inoperative	Unsatisfactory		C. Fencing/Gates/Signs	Satisfactory
	D. FOD: Gravel/Debris/Etc	Satisfactory		D. Faulty Aim/Adjustment	Satisfactory	ARFF	A. Equipment/Crew Available	Satisfactory
	E. Rubber Deposits	Satisfactory	Navigation Aids	A. Rotating Beacon	Satisfactory	B. Communications/Alarm	Satisfactory	
	F. Ponding/Edge Dams	Satisfactory	B. Wind Indicators	Satisfactory	Fueling Operations	A. Fencing/Gates/Signs	Satisfactory	
	G. Ruts/Humps/Erosion	Satisfactory	C. REILS/VGSI Systems	Satisfactory	B. Fuel Marking/Labeling	Satisfactory		
Safety Areas	A. Drainage/Construction	Satisfactory	Snow and Ice	A. Surface Conditions	Satisfactory	C. Fire Extinguishers	Satisfactory	
	B. Objects/Fragile Bases	Satisfactory		B. Snowbank Clearance	Satisfactory	D. Grounding Clips	Satisfactory	
Public Protection	A. Fencing Gates	Satisfactory		C. Lights/Sign Obscured	Satisfactory	E. Fuel Leaks/Vegetation	Satisfactory	
	B. Signs	Satisfactory		D. NAVAIDS/Fire Access	Satisfactory	Markings and Signs	A. Visible Standards	Satisfactory
Wildlife Hazards	A. Dead Birds	Satisfactory	Construction	A. Barricade Lights	Satisfactory	B. Hold Lines/Signs	Satisfactory	
	B. Flocks of Birds/Animals	Satisfactory		B. Equipment Parking	Satisfactory	C. Frangible Signs	Satisfactory	

139 WORK ORDERS - OPENED DURING SHIFT

139 WORK ORDERS - CLOSED DURING SHIFT
Repair/Replace



Benefits for Management



Benefits for Management

- More Informed Decisions
 - How much money have we spent on a certain asset?
 - Is it better to repair an asset or to completely replace?
 - Are there trends of failures in certain areas of the airport?



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Overview of Asset Management Elements



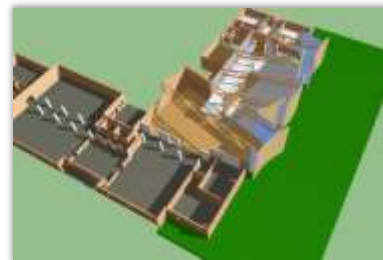
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Taking the Discussion a Step Further



BIM Benefits for Design and Construction

- Improved design process
- 3-D visualization for owner (static only)
- Coordination between disciplines
- Interference checking
- Facilitates energy efficiency and LEED
- Automated quantity take offs
- 4-D scheduling
- Improved documentation of design intent
- Potentially used for fabrication

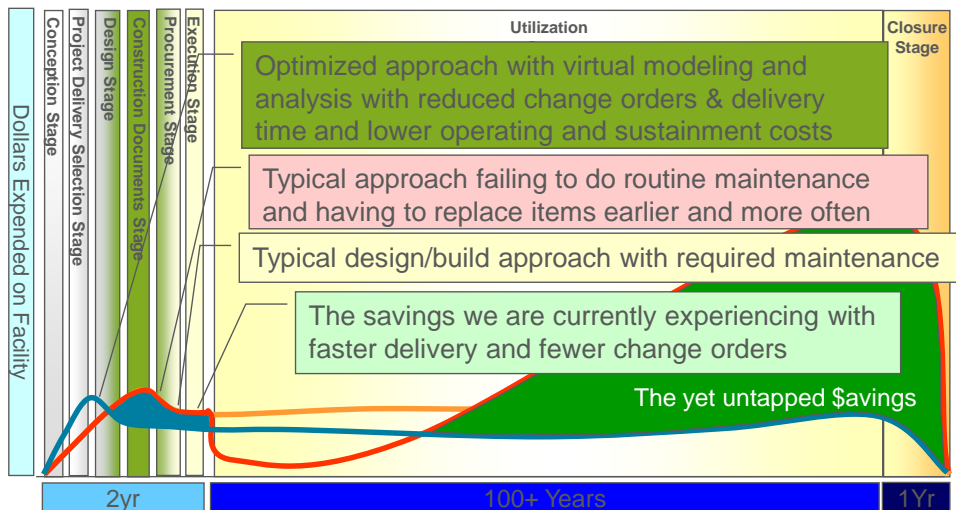


Migrate BIM to GIS

- BIM is MUCH richer in detail than GIS
- GIS has only recently become fully 3-D
- BIM contains information to construct a building, but not to manage it
 - Equipment maintenance
 - Occupant information
 - Space polygons
 - Asset details



BIM Can Support Asset Management



Questions/Discussion

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